queuing a selection order of audio and video information items on the jukebox unit;

sending the selection order of audio and video information items to the respective one of the television sets via the television cable distribution network; and

sending information relating to user identification and selection cost to a billing system.

21.   A method according to claim 20, wherein the selecting step is practiced by actuating keys on a keyboard, the jukebox unit interpreting the actuated keys as cursor movements.

22.   A method according to claim 20, wherein the step of sending an identifier is practiced by sending the identifier via a telephone line or by remote control. --

REMARKS

Claims 11-22 are present in this application. By this Amendment, an Abstract of the Disclosure has been added to the specification, the specification has been cancelled in its entirety in favor of a substitute specification, claims 1-10 have been cancelled, and claims 11-22 have been added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

In paragraph 1 of the Office Action, the Examiner indicates that this application does not contain an Abstract of the Disclosure. The Abstract in this application, however, was included with the International Application filed in the International Receiving Office. Notwithstanding, for the Examiner's convenience, an Abstract of the Disclosure is attached hereto on a separate sheet.

In paragraph 2 of the Office Action, claim 4 was rejected under 35 U.S.C. §112, second paragraph. Claim 4 has been cancelled by this Amendment, and Applicants therefore submit that the rejection is moot. Withdrawal of the rejection is requested.

Claims 1 and 5 were rejected under 35 U.S.C. §102(b) over U.S. Patent No. 4,788,675 to ·Jones et al. This rejection is respectfully traversed.

The subject matter of claims 1 and 5 has been substantially incorporated into new claims 11 and 15, respectively.

Jones discloses a music delivery system using a video channel of a network coaxial TV cable. The system multiplexes approximately 30 to 200 audio channels into a 6 MHz bandwidth video channel so that 30 to 200 different audio "sub-channels" can be simultaneously transmitted via a single video channel. Applicants submit that the system disclosed in Jones is considerably different from the system and method according to the present invention, and Applicants submit that the claims are distinguishable over the Jones patent.

In particular, in the Jones system, the plurality of music sources 10 each provide a different musical selection. Music sources are played repetitively and continuously, and each music source provides an output to a corresponding voltage controlled oscillator (VCO) 12. The oscillators have center frequencies spaced at 400 kHz intervals. With this system, all of the available songs are played continuously on the sub-channels. In order to "select" a desired song, the user is required to tune his system to a particular frequency band. Naturally, because the specific songs are being continuously played in a repeating manner, it is likely that the subscriber would have to wait until the desired selection begins (see, for example, column 6, lines 35-36).

In contrast, in accordance with the present invention, each of the television sets of the system is provided with a remote unit interacting with a respective television set. The remote unit effects selection of at least one audio and video information item from the plurality of information items stored on the jukebox unit for transmission over the dedicated channel. Thus, with the structure according to the claimed invention, in contrast with the Jones system, the remote unit enables the user to select an information item <u>for transmission over the dedicated channel</u>. In the Jones system, rather, all of the music selections are continuously being played on the video channel.

In addition, the Jones system multiplexes 30 to 200 audio channels into a 6 MHz bandwidth video channel so that 30 to 200 different audio "sub-channels" can be simultaneously transmitted. Consequently, Jones lacks the dedicated channel for effecting communication between the jukebox unit and the cable network as claimed. This dedicated channel enables the claimed system to transmit video information. The Jones system, however, is not suited for delivering video information. As explained in the present specification, in order to transmit video information on a video channel, it is necessary to use the primary carrier of the channel. Consequently, it will no longer be possible to transmit more than one video information item associated with at most two audio information items. Thus, if it is desired to continuously transmit 200 video items, no free channel would be available to transmit the usual television channels.

Still further, the Office Action concludes that the claimed billing device is "inherent" in Jones "since the music is delivered from the cable headend to the subscriber through the cable TV." The structure according to the claimed invention, however, enables the provider to bill a

user on a per song basis. That is, the structure includes an identifier that identifies one of the remote unit or the respective television set corresponding to selected audio and video information units, and a billing device that receives information from the identifier to effect billing for selections made based on the identifier information. This structure is also lacking in Jones. Indeed, the Jones system subscribers will be required to pay for the continuously played songs whether the subscribers use the service or not.

For at least these reasons, Applicants respectfully submit that the rejection is misplaced.

Applicants submit that the subject matter of claim 5, which has been incorporated into claim 15, is also distinguishable over Jones. Notwithstanding, Applicants submit that claim 15 is allowable at least by virtue of its dependency on an allowable independent claim. In addition, in the Jones system, the subscriber's audio converter is the receiver of the musical selection. In contrast, with the structure according to the claimed invention, the jukebox unit is in fact the emitter of the audio or video selection. Moreover, as explained above, the Jones system could not be used to transmit video information, and Jones thus lacks any teaching or suggestion of a video controller circuit implemented on either the subscriber's audio converter or on the music delivery system. Even further, Jones lacks any teaching or suggestion of an operating system for the music delivery system that is multitask.

Applicants thus respectfully submit that the rejection is misplaced. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 2 was rejected under 35 U.S.C. §103(a) over Jones in view of U.S. Patent No. 5,236,199 to Thompson.[1] Thompson, however, does not correct the deficiencies noted above with respect to the Jones patent. Consequently, Applicants submit that the subject matter of claim 2, which has been incorporated into new claim 12, and claim 4, which has been incorporated into claim 14, are allowable at least by virtue of their dependency on an allowable independent claim.

Moreover, the Office Action recognizes that Jones lacks structure effecting selection of music using a telephone key pad. Rather, in the Jones apparatus, selection of a particular music piece is achieved by "tuning" the subscriber's audio converter to a frequency corresponding to the desired selection. There is no suggestion in Jones or Thompson concerning how the Jones system may possibly be controlled via a telephone set. This modification asserted in the Office Action would indeed require significant design changes to function properly. Thompson does not provide any such suggestion, and Applicants submit that those of ordinary skill in the art would not look to Thompson to modify the structure of the Jones audio converter.

Withdrawal of the rejection is respectfully requested.

Claim 3 was rejected under 35 U.S.C. §103(a) over Jones in view of U.S. Patent No. 5,191,410 to McCally et al. McCally, however, also does not correct the deficiencies noted above with respect to the Jones patent. Consequently, Applicants submit that the subject matter of claim 3, which has been incorporated into claim 13, is allowable at least by virtue of its dependency on an allowable independent claim. Withdrawal of the rejection is requested.

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[1] It appears that the Examiner also intended to reject claim 4.

Claim 6 was rejected under 35 U.S.C. §103(a) over Jones in view of GB 2,259,398 to Linfoot. Linfoot, however, similarly does not correct the deficiencies noted above with respect to Jones. Consequently, Applicants submit that the subject matter of claim 6, which has been incorporated into claim 16, is allowable at least by virtue of its dependency on an allowable independent claim. Withdrawal of the rejection is requested.

Claims 7-9 were rejected under 35 U.S.C. §103 over Jones in view of U.S. Patent No. 5,341,350 to Frank et al. This rejection is respectfully traversed.

At the outset, Applicants submit that the subject matter of claims 7-9, which is included in claims 17-19, is allowable at least by virtue of the claims' dependency on an allowable independent claim, as the Frank reference does not correct the deficiencies noted above with respect to Jones. Moreover, as discussed above, payment in the Jones system is limited to subscriber fees for an audio converter. This audio converter in Jones is a <u>receiver</u> for a musical selection. The Jones system is thus completely incompatible with a "pay per play" arrangement. Thus, notwithstanding the disclosure of the Frank patent, Applicants respectfully submit that the combination of Jones and Frank is improper. As already explained, with the Jones system, the subscriber is required to pay regardless of whether the service is used or whether none of the audio selections satisfy the subscriber. With the structure according to claims 17 and 18, the structure is configured such that the user may only pay for selections made. For this reason also, Applicants respectfully submit that the rejection is misplaced.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claim 10 was rejected under 35 U.S.C. §103(a) over Jones in view of Thompson and Frank. This rejection is respectfully traversed.

As noted above, in contrast with the subject matter of the claimed invention, Jones merely discloses an <u>audio</u> delivery system. The subject matter of claim 10, which has been included in claims 20-22, rather defines a method for using a system for distributing and selecting audio and <u>video</u> information items. The method includes steps such as selecting, queuing, and sending one or more of the plurality of audio and video information items. For at least this reason, Applicants submit that the rejection is misplaced.

Moreover, although Thompson discloses a telephone keypad in use with a processing apparatus, neither Thompson nor Jones discloses or suggests the manner in which the Jones system may be modified to incorporate this feature of the invention. Indeed, neither reference contemplates the ability to remotely tune the audio receiver in the Jones system, and Applicants submit that those of ordinary skill in the art viewing Thompson would not have been provided with such a suggestion.

Frank discloses a jukebox connected to a telecommunications network. As recognized by the Examiner, the jukebox is coin operated. In contrast, the jukebox of the present invention is connected to the television cable distribution network and by another interface, to an auxiliary network either by telephone or electrically or the like. None of Frank, Thompson, or Jones, taken singly or in combination discloses or remotely suggests how the teachings in Frank can be incorporated into the Jones system. Indeed, these systems are not compatible.

See <u>In re Kamm</u>, 172 USPQ 298, 301, 302 (CCPA 1972) wherein the Court held:

> "The rejection here runs afoul of a basis mandate inherent in '103 --
> that 'a piecemeal reconstruction of the prior art patents in the light
> of appellants' disclosure' shall not be the basis for a holding of
> obviousness. <u>In re Rothermel</u>, 47 CCPA 866, 870, 276 F.2d 393,
> 396, 125 USPQ 328, 331 (1960). 'It is impermissible within the

framework of section 103 to pick and choose from any one
reference only so much of it as will support a given position, to the
exclusion of other parts necessary to the full appreciation of what
such reference fairly suggests to one of ordinary skill in the art.' ...
However, we are satisfied that when the secondary references are
viewed in their entirety, with due consideration given to what they
fail to disclose and what they disclose as undesirable, it is evident
that the proposed modification of the primary reference would not
have been obvious to one of ordinary skill in the art at the time the
invention was made." (Emphasis added.)

Moreover, claim 20 recites the step of sending information relating to user identification

and selection cost to a billing system. Claim 22 further defines this step, reciting that the step of

sending an identifier is practiced by sending the identifier via a telephone line or by remote

control. None of Jones, Thompson or Frank discloses or remotely suggests sending user

identification information and selection costs to a billing system. Indeed, as discussed above,

there is no such sending in Jones at least because the selection in Jones is not made remotely.

Claim 20 also defines the steps of selecting one of the plurality of audio and video

information items, queuing a selection order of audio and video information items on the jukebox

unit, and sending the selection order of audio and video information items to the respective one

of the television sets via the television cable distribution network. In Jones, however, the

selection is performed by merely tuning the subscriber's audio receiver to a frequency that

continuously plays a particular selection. Jones thus lacks these claimed steps according to the

invention. Frank and Thompson do not correct these deficiencies in Jones, and for this reason

also, Applicants respectfully submit that the rejection is misplaced.

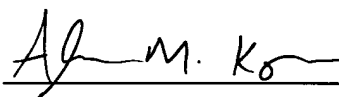Reconsideration and withdrawal of the rejection is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

Respectfully submitted,

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Attachments:
    Abstract
    Substitute Specification
    Hand-corrected Work Copy of the Specification as Filed
    Request for Approval of Drawing Corrections

SYSTEM FOR DISTRIBUTING AND SELECTING AUDIO AND VIDEO INFORMATION AND METHOD IMPLEMENTED BY SAID SYSTEM

BACKGROUND OF THE INVENTION

1.   Field of the Invention

This invention relates to a system for distributing and selecting audio or video information on a network and the method implemented by this system.

2.   Description of Related Art

British patent 2166328 discloses a device which distributes audio or video information over a coaxial cable network requiring a specific bus of the ISDN type comprising a telephone network and a communications bus for the other devices, with the communications bus containing remote control boxes, each linked to an adapter device connected to the bus.

A network such as this has the drawback that it requires wiring of several networks, first coaxial type wiring, second wiring for the ISDN-type telephone network, and finally third wiring for the communications control bus.

Another patent application, European patent no. 140493, circumvents these drawbacks by using only the coaxial network to distribute audio information originating from a jukebox unit, using on the cable network at least one channel allocated to transmission of audio information. This channel is divided into subchannels and each audio selection is frequency-multiplexed. Thus 75 to 200 audio channels are sent over a video channel with a bandwidth of 6 MHz. A conversion box makes it possible to select each of the subchannels and thus for the user to hear the song carried by this subchannel. The drawback of a system such as this is that the user cannot determine the

beginning and the end of the song, since all the selections are played without interruption, and the

waiting time can be up to 30 seconds. Another drawback of this system design is that it is not

possible to simultaneously transmit video and audio information. In fact, in order to transmit video

information the primary carrier of each channel must be taken, and in this case, per channel it will

no longer be possible to transmit more than one video information item associated with one or two

audio information items of acceptable quality, among which one of these two audio information

items corresponds to the one associated with the video information. Thus, in order to transmit

video information corresponding to 200 selections, the saturation point would soon be reached and

all available channels would be occupied. In this case, transmission of television channels would

no longer be possible and in any case the number of audio information items will be less than 10.

SUMMARY OF THE INVENTION

The object of the invention is therefore to devise a system for distributing and selecting

audio or video information on a coaxial cable network without hindering distribution of television

programs on this cable network and while simultaneously allowing distribution of video data

corresponding to selections available on a jukebox unit. The object of the system is also to allow

interactive communication between the user and the available selections without having to specially

wire the premises equipped with the system by using networks which would normally already exist

on the premises.

This object is achieved with a system for distributing and selecting audio and video

information over a coaxial cable network having in association a jukebox unit connected by a

modulator to this cable television distribution network. A channel is allocated for the transmission

of audio or video information. The system also includes structure for interacting with the television

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for remote selection of at least one audio or video information item from the plurality of information items to be transmitted over the cable network; structure for identifying the selection device or the television set linked to the selection device; and structure for billing the user linked to a television set for the selections made.

According to another feature, the selection device includes the telephone network and the connected exchange of the PABX type which delivers to the interface of the jukebox voice frequency signals used by interface software incorporated in the jukebox to interpret the pushing of buttons on a telephone set as mouse events affecting movement of a cursor on screen windows for guiding the user. These signals also contain identification information.

According to another feature, voice assistance structure is provided to guide the user in pushing the telephone set buttons.

According to another feature, the selection device includes a controller connected by the electrical network to an appropriate interface of the jukebox. The interface and selection device both operate on the principle of carrier streams to transmit a piece of identification information and control data corresponding to the pushing of control buttons.

According to another feature, the jukebox has a mass storage, a primary processor operating a multitask system, a video controller circuit and an audio controller circuit belonging to the cable network. The video and audio controller circuits are connected to an RF radio frequency modulator and an input and output interface for the remote selection structure.

According to another feature the jukebox has a touch screen and an interface specific to the touch screen, an audio controller circuit and a video controller circuit of a display device belonging to the jukebox.

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According to another feature the jukebox has a money changing device.

According to another feature the billing structure uses a database in the jukebox by linking the selected title to the selection cost and by delivering to a billing system a user identifier and the amount to be billed to him.

According to another feature of the invention the television screen enables display of a title selection menu allowing selections to be made either by direct access to the title or the performer, or by category and selection from a list of the category.

Another object of the invention is a process for using a distribution and selection system which does not require wiring.

This object is achieved with a system for distributing and selecting audio or video information including a television cable distribution network connected via an RF modulator and an audio controller card and a video controller card to a jukebox unit. The jukebox unit is in turn connected to another network, either by telephone or electrically by an interface. The method includes the following stages:

- sending of an identifier from the premises associated with the television set either by telephone line or by remote control;

- a stage of audio or video information selection to be executed on the network by using a keyboard and an interface which interprets pushing of the keys as cursor movements;

- a stage wherein the order of selection and playing of the audio or video information is queued on the jukebox;

- a stage wherein this information is sent over the cable network;

- a stage wherein once the selection has been validated, information relating to user identification and selection cost is sent to a billing system.

BRIEF DESCRIPTION OF THE DRAWINGS

Other advantages and features of the invention will be discussed in the description below, with reference to the attached drawings, in which:

Figure 1 shows a schematic of the network for distributing audio or video information;

Figure 2 shows a diagram of the circuits which comprise the jukebox of the invention;

Figure 3 shows the organization of the multitask system which manages all the hardware and software;

Figure 4 shows a flowchart which describes how the multitask operating system functions;

Figure 5 shows a flowchart of verification of task activity;

Figure 6 shows the flowchart which describes task queuing; and

Figure 7 shows a second embodiment of the network according to the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The invention shown in Fig. 1 constitutes a jukebox unit (1) located in premises (Z1). This jukebox unit (1) is connected to a radio frequency modulator (9) which is connected to a coupler circuit C via a coaxial cable. Coupler circuit C via coaxial cable supplies distributors R which in turn are connected by coaxial cables to television sets (TV1, TV2, TV3, TV4). The coupler also receives on another of its inputs, via coaxial cable, a radio frequency source feed allowing distribution of ordinary television programs. Televisions are located in area (Z2) where each television is installed, for example, in a room. Television (TV1) is installed in the room (CH1), and

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this room (CH1) has a telephone set (T1) connected by a line to a telephone exchange (10) of the PABX type. This exchange (10) is in turn connected to a billing computer. Finally, exchange (10) is connected to an appropriate interface (8) of jukebox (1). Each room (CH2, CH3, CH4) which has television set (TV2, TV3, TV4) also has an associated telephone set (T2, T3, T4). Jukebox unit (1) is comprised of a central microprocessor unit CPU which is a high-performance PC-compatible system, the choice for the embodiment having fallen on an Intel 80486 DX/2 system which has storage means and the following characteristics:

- compatibility with the local Vesa bus,

- processor cache memory: 256 kO,

- high performance parallel and serial ports,

- SVGA-type microprocessor graphics adapter

- type SCSI/2 bus controller,

- 32 MO battery backed-up static RAM.

Any other central processor with equivalent or better performance can be used in the invention.

This central processor unit controls and manages an audio control circuit (5), a telecommunications control circuit (4), an input control circuit (3), a mass storage control circuit (2) and a display control circuit (6). The display consists essentially of a 14 or 15 inch (35.56 cm) flat screen video monitor (62) without interleaving of the SVGA type, with high resolution and low radiation, which is used for image reproduction (for example, the covers of the albums of the musical selections), graphics or video clips.

A mass storage device (21) using high-speed, high-capacity SCSI-type hard disks is connected to the storage already present in the microprocessor device. This device is used to store

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digitized and compressed audiovisual information.

High-speed telecommunications modem adapter (41) of at least 28.8 Kbps is integrated to allow connection to a network for distribution of audiovisual information controlled by a central server.

The central processing unit (CPU) also controls and manages video controller circuit (7) connected by its output V2 to radio frequency modulator (9) which is also connected to an audio output of audio control circuit (5) which is independent of volume, tone and balance controls.

To reproduce audio data of musical selections, the system has loudspeakers (54) which receive the signal of an amplifier-tuner (53) linked to electronic circuit (5) of the music synthesizer type intended to support a large number of input sources while providing one output with CD (compact disk)-type quality, such as for example the microprocessor multimedia audio adapter of the "Sound Blaster" card type SBP32AWE by Creative Labs Inc to which two memory buffers (56, 57) are added for a purpose described below.

Likewise the display control circuit also has two buffer memories (66, 67) for a purpose described below.

Likewise additional video controller circuits (7) use these buffer (66, 67) circuits to transfer data between the hard disk and coaxial cable network.

A ventilated, thermally-controlled power supply of 240 watts delivers power to the system. This power supply is protected from surges and harmonics.

The audiovisual reproduction system manages via input controller circuit (3) an "Intelli Touch" 14-inch (35.56 cm) touch screen (33) from Elo Touch Systems Inc. which includes a glass coated board using "advanced surface wave technology" and an AT type bus controller. After having displayed on video monitor (62) or a television screen (61) various selection data used by

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the customers, this touch screen allows management command and control information used by the system manager or owner to be displayed as well. It is likewise used for maintenance purposes in combination with an external keyboard (34) which can be connected to a system which has a keyboard connector for this purpose, controlled by a key lock (32) via interface circuit (3).

Input circuit (3) likewise interfaces with a system remote control set (31) composed for example of:

- an infrared remote control from Mind Path Technologies Inc., an emitter which has 15 control keys for the microprocessor system and 8 control keys for the projection device.

- an infrared receiver with serial adapter from Mind Path Technologies Inc.

A fee payment device (35) from National Registers Inc. is likewise connected to input interface circuit (3). It is also possible to use any other device which allows receipt of any type of payment by coins, bills, tokens, magnetic chip cards or a combination of means of payment.

To house the circuits, each device has a chassis or frame of steel with external customizable fittings.

Besides these components, a microphone (55) is connected to audio controller (5) of each device. This allows its conversion into a powerful public address system or possibly a karaoke machine. Likewise a wireless loudspeaker system can be used by the system.

Remote control set (31) allows the manager, for example from behind the bar, to access and control various commands such as:

- microphone start/stop command,

- loudspeaker muting command,

- audio volume control command;

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- command to cancel the musical selection being played.

Two buffers (56, 57) are connected to audio controller circuit (5) to allow each to store information corresponding to a quarter of a second of sound in alternation. Likewise two buffers (66, 67) are linked to each video controller circuit (6), each of which is able to store a tenth of a second of video each in alternation. Finally, respective buffer (46, 36, 26) is linked to each of the circuits for the communications controller (4), input interface (3), and storage (2).

The system operating software was developed around a library of tools and services largely oriented to the audiovisual domain in a multimedia environment. This library advantageously includes a powerful multitask operating system which effectively authorizes simultaneous execution of multiple fragments of code. This operating software thus allows concurrent execution--in an orderly manner and avoiding any conflict--of operations carried out on the display or audio reproduction structure as well as management of the telecommunications lines via the distribution network. In addition, the software has high flexibility.

The digitized and compressed audiovisual data are stored in storage device (21).

Each selection is available in two digitized formats: with hi-fi quality or CD quality.

The multitask operating system is the essential component for allowing simultaneous execution of multiple code fragments and for managing priorities between the various tasks which arise.

This multitask operating system is organized as shown in Figure 3 around a kernel comprising a module (11) for resolving priorities between tasks, a task scheduling module (12), a module (13) for serialization of material used, and a process communications module (14). Each of the modules communicates with applications programming interfaces (15) and a database (16). There are as many programming interfaces as there are applications. Thus, module (15) includes a

first programming interface (151) for key switch (32), a second programming interface (152) for remote control (31), a third programming interface (153) for touch screen (33), a fourth programming interface (154) for keyboard (34), a fifth programming interface (155) for payment device (35), a sixth programming interface (156) for audio control circuit (5), a seventh programming interface (157) for video control circuit (6), an eighth interface (159) for the video control circuit of the cable network and a last interface (158a) for telecommunications control circuit (4) and (158b) for PABX communications control circuit (10).

Five tasks with a decreasing order of priority are managed by the kernel of the operating system, the first (76) for the video inputs/outputs has the highest priority, the second (75) of level two relates to audio, the third (74) of level three to telecommunications, the fourth (73) of level four to interfaces and the fifth (70) of level five to management. These orders of priority will be considered by priority resolution module (11) as and when a task appears and disappears. Thus, as soon as a video task appears, the other tasks underway are suspended, priority is given to this task and all the resources are assigned to the video task. At the output, video task (76) is designed to unload the video files from mass memory (21) alternatively to one of two buffers (66, 67) while the other buffer (67 or 66 respectively) is used by video controller circuit (6) to produce the display after decompression of data. At the input, video task (76) is designed to transfer data received in telecommunications buffer (46) to mass memory (21). It is the same for audio task (75) on the one hand at the input between telecommunications buffer (46) and buffer (26) of mass memory (21) and on the other hand at the output between buffer (26) of mass memory (21) and one of two buffers (56, 57) of audio controller circuit (5).

Task scheduling module (12) will now be described in conjunction with Figure 4. In the order of priority this module performs a first test (761) to determine if the video task is active, i.e.,

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if one of video buffers (66, 67) is empty. In the case of a negative response the task scheduling module passes to the following test which is second test (751) to determine if the audio task is active, i.e., if one of buffers (56, 57) is empty. In the case of a negative response third test (741) determines if the communication task is active, i.e., if buffer (46) is empty. After a positive response to one of the tests, task scheduling module (12) at stage (131) fills memory access request queue (13) and at stage (132) executes this request by reading or writing between mass storage (21) and the buffer corresponding to the active task, then loops back to the first test. When test (741) on communications activity is affirmative, scheduler (12) performs test (742) to determine if it is a matter of reading or writing data in the memory. If yes, the read or write request is placed in a queue at stage (131). In the opposite case, the scheduler determines at stage (743) if it is transmission or reception and in the case of transmission sends by stage (744) a block of data to the central server. In the case of reception the scheduler verifies at stage (746) that the kernel buffers are free for access and in the affirmative sends a message to the central server to accept reception of a data block at stage (747). After receiving a block, an error check (748) of the cyclic redundancy check (CRC) type is executed. The block is rejected at stage (740) in case of error, or accepted in the opposite case at stage (749) by sending a corresponding message to the central server indicating that the block bearing a specific number is rejected or accepted, then loops back to the start tests. When there is no higher level task active, at stage (731 or 701) the scheduler processes interface or management tasks.

Detection of an active task or ready task is done as shown in Figure 5 by a test respectively (721 to 761) on each of the respective hardware or software buffers (26) of the hard disk, (36) of the interface, (46) of telecommunications, (56 and 57) of audio, (66 and 67) of video which are linked to each of respective controller circuits (2, 3, 4, 5, 6) of each of the hardware devices linked to

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central unit (1). Test (721) makes it possible to see whether the data are present in the input and output buffer of the disk, test (731) makes it possible to see whether data are present in the hardware or software buffers of the customer interface device, test (741) makes it possible to see whether data are present in the software or hardware buffers of the telecommunications device, test (751) makes it possible to determine whether data are present in the hardware or software buffer for direction, and test (761) makes it possible to see whether data are present in the hardware or software buffers of the video device. If one or more of these buffers are filled with data, scheduler (12) positions the respective status buffer or buffers (821) for the hard disk, (831) for the interface, (841) for telecommunications, (851) for audio, (861) for video corresponding to the hardware in a logic state indicative of the activity. In the opposite case the scheduler status buffers are returned at stage (800) to a value indicative of inactivity.

The operating status of the system is kept on the hard disk.

Each time a notable event occurs, the system immediately registers it on the disk.

Thus, in the case in which an electrical fault or hardware failure occurs, the system will accordingly restart exactly at the same location where it had been interrupted.

Events which trigger back-up of the operating status are:

- insertion of money (crediting);

- addition of a selection to the queue;

- end of a selection (change from the selection currently being played).

The file is then in a machine format which can only be read by the unit and does not occupy more than 64 octets.

The number and type of active tasks is indicated to scheduler (12) by execution of the selection management module SPMM whose flowchart is shown in Figure 6. The management

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exercised by this module begins with test (61) to determine if selections are in the queue.

Consequently, if test (61) on the queue determines that selections are waiting, when a customer chooses a title he wishes to hear, it is automatically written in a queue file of the system on the hard disk.

Thus, any selection made will never be lost in case of an electrical failure. The system plays (reproduces) the selection in its entirety before removing it from the queue file.

When the selection has been reproduced in its entirety, it is removed from the queue file and written in the system statistics file with the date and time of purchase as well as the date and time at which it was played.

Immediately after transfer of the completed selection to the statistics file, the device checks if there are others in the queue file. If there is another, the device begins immediately to play the selection.

The total time elapsed between the end of one selection and the beginning of the next one is less than 0.5 seconds.

It is possible to extend this delay using a button located in the system control panel.

Processing continues with test (65) conducted to determine if the selection contains an audio scenario. If yes, at stage (651) this scenario is written in the task queue of scheduler (12). If no, or after this entry, processing is continued by test (66) to determine if the selection contains moving images. If yes, the video scenario is written at stage (661) in the task queue of scheduler (12). If no or if yes after this entry, processing is continued by test (64) to determine if the selection contains still graphics. If yes, at stage (641) this graphic presentation scenario is written in the task queue of scheduler (12). If no or if yes after this entry, processing is continued by test (63) to determine if the selection contains an advertising scenario. If yes, at stage (631) the scenario is

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written in the task queue of scheduler (12). Thus scheduler (12) notified of uncompleted tasks can manage the progression of tasks simultaneously.

Due on the one hand to the multitask management mode and on the other to the presence of hardware or software buffers assigned to each of the tasks to temporarily store data, it is possible to add management tasks of the video control modules for the coaxial network and of an interface with the telephone exchange on the premises without having to fundamentally modify functioning of a jukebox according to the invention. Moreover, operation of the telephone network in association with operation of the coaxial cable network on the premises makes it possible to broadcast music by the method according to the invention without having to make major modifications to the wiring on the premises and in the device allowing installation of the system.

In fact, in operation, a user, for example in room CH1, will take his set T1 and call a certain number corresponding to a imaginary room number allocated for use and selection of information to be broadcast on the coaxial network. When the PABX recognizes this number it sends a signal to interface (8) of jukebox (1) which triggers a task of selection of audio and video pieces to be broadcast. This selection task triggers transmission over the coaxial network of information which allows display corresponding to presentation windows which have selection boxes activated by a cursor moved by the actuation of certain buttons on the telephone. A software interface interprets the voice frequencies of the telephone buttons pressed to convert them into mouse events which can be interpreted by the operating system of the jukebox in such a way as to cause in association with these pushed buttons the movement of a marker on the windows shown on the television screens. This marker is moved on selection validation buttons in order to confirm the selection by pushing a button on the telephone keyboard specific to this action. The selection made by the user in this way in his room using the telephone and television screen, will be taken into account in the jukebox

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request queue just as the other selections made on the touch screen of the jukebox and will be interpreted and sent over the cable network when the time comes in order to be broadcast over all the television receivers in the building. In addition, during telephone communication the PABX exchange sent a room identification number to the jukebox. This latter sends via the PABX to the billing system the room number and cost of the selection(s) made so that the user can be billed directly for the musical or video pieces he has chosen.

Finally, the device shown in Fig. 7 is another embodiment of this invention featuring the cable network with its distributors (R), its coupler (C) and its different television sets (TV1, TV2), connected by coupler (C) to a radio frequency modulator (9) which in turn is connected to the stereo, audio and video output (V2) of jukebox (1). Jukebox (1) has interface (8) connected to box (82) plugged into the power grid. This box (82) is intended to extract from the current the control data which are superimposed on the carrier current. These control data are transmitted by control box (83) which in turn is connected to the grid by an electrical socket. The control box has either a mouse-type device or a trackball or joystick with a validation button to activate each time the presentation button of the screen on which the cursor or marker is moved via the movement component of the joystick, trackball or mouse type.

Any modification by one skilled in the art is likewise part of the invention.

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System for distributing and selecting audio and video information and method implemented by said system

1. Field of the Invention   BACKGROUND OF THE INVENTION

This invention relates to a system for distributing and selecting audio or video information on a network and the method implemented by this system.

2. Description of Related Art

British patent 2166328 discloses a device which distributes audio or video information over a coaxial cable network requiring a specific bus of the ISDN type comprising a telephone network and a communications bus for the other devices, with the said communications bus containing remote control boxes, each linked to an adapter device connected to the bus.

A network such as this has the drawback that it requires wiring of several networks, first coaxial type wiring, second wiring for the ISDN-type telephone network, and finally third wiring for the communications control bus.

Another patent application, European patent no. 140493, circumvents these drawbacks by using only the coaxial network to distribute audio information originating from a jukebox unit, using on the cable network at least one channel allocated to transmission of audio information. This channel is divided into subchannels and each audio selection is frequency-multiplexed. Thus 75 to 200 audio channels are sent over a video channel with a bandwidth of 6 MHz. A conversion box makes it possible to select each of the subchannels and thus for the user to hear the song carried by this subchannel. The drawback of a system such as this is that the user cannot determine the beginning and the end of the song, since all the selections are played without interruption, and the waiting time can be up to 30 seconds. Another drawback of this system

design is that it is not possible to simultaneously transmit video and audio information. In fact, in order to transmit video information the primary carrier of each channel must be taken, and in this case, per channel it will no longer be possible to transmit more than one video information item associated with one or two audio information items of acceptable quality, among which one of these two audio information items corresponds to the one associated with the video information. Thus, in order to transmit video information corresponding to 200 selections, the saturation point will ~~soon~~ [would] be reached and all available channels will [would] be occupied. In this case, transmission of television channels will no longer be possible and in any case the number of audio information items will be less than 10.

Summary of the invention

The object of the invention is therefore to devise a system for distributing and selecting audio or video information on a coaxial cable network without hindering distribution of television programs on this cable network and while simultaneously allowing distribution of video data corresponding to selections available on a jukebox unit. The object of the system is also to allow interactive communication between the user and the available selections without having to specially wire the premises equipped with the system by using networks which would normally already exist on the premises.

This object is achieved ~~in that the~~ [with a] system for distributing and selecting audio and video information over a coaxial cable network having in association a jukebox unit connected by a modulator to this cable television distribution network, ~~is characterized by its including~~ [is] a channel allocated for the transmission of audio or video information; [the system also includes] ~~means~~ [structure] for interacting with the television for remote selection

of at least one audio or video information item from the plurality of information items to be transmitted over the cable network; [N° 19]

~~means~~ structure for identifying the selection ~~means~~ device or the television set linked to the selection ~~means~~ device; and

~~means of~~ structure for billing the user linked to a television set for the selections made.

According to another feature, the selection ~~means are comprised of~~ device includes the telephone network and the connected exchange of the PABX type which delivers to the interface of the jukebox voice frequency signals used by interface software incorporated in the jukebox to interpret the pushing of buttons on a telephone set as mouse events affecting movement of a cursor on screen windows for guiding the user, ~~said~~ These signals also ~~containing~~ contain identification information.

According to another feature, voice assistance ~~means are~~ structure is provided to guide the user in pushing the telephone set buttons.

According to another feature, the selection ~~means are comprised of~~ device includes a ~~control means~~ controller connected by the electrical network to an appropriate interface of the jukebox, ~~said~~ the interface and selection ~~means~~ device both ~~operating~~ operate on the principle of carrier streams to transmit a piece of identification information and control data corresponding to the pushing of control buttons.

According to another feature, the jukebox has a mass storage ~~means~~, a primary processor operating a multitask system, a video controller circuit and an audio controller circuit belonging to the cable network, ~~said~~ The video and audio controller circuits ~~being~~ are connected to an RF radio frequency modulator and an input and output interface for the remote selection ~~means~~ structure.

According to another feature the jukebox has a touch screen and an interface specific to the touch screen, an audio controller circuit and a video controller circuit of a display device belonging to the jukebox.

According to another feature the jukebox has a money changing device.

According to another feature, the billing structure uses a database in the jukebox by linking the selected title to the selection cost and by delivering to a billing system a user identifier and the amount to be billed to him.

According to another feature of the invention the television screen enables display of a title selection menu allowing selections to be made either by direct access to the title or the performer, or by category and selection from a list of the category.

Another object of the invention is a process for using a distribution and selection system which does not require wiring.

This object is achieved with a system for distributing and selecting audio or video information including a television cable distribution network connected via an RF modulator and an audio controller card and a video controller card to a jukebox unit, The jukebox unit is in turn connected to another network, either by telephone or electrically by an interface, The method includes the following stages:

- sending of an identifier from the premises associated with the television set either by telephone line or by remote control;

- a stage of audio or video information selection to be executed on the network by using a keyboard and an interface which interprets pushing of the keys as cursor movements;

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-    a stage wherein the order of selection and playing of the audio or video information is queued on the jukebox;

-    a stage wherein this information is sent over the cable network;

-    a stage wherein once the selection has been validated, information relating to user identification and selection cost is sent to a billing system.

BRIEF DESCRIPTION OF THE DRAWINGS

Other advantages and features of the invention will be discussed in the description below, with reference to the attached drawings, in which:

Figure 1 shows a schematic of the network for distributing audio or video information;

Figure 2 shows a diagram of the circuits which comprise the jukebox of the invention;

Figure 3 shows the organization of the multitask system which manages all the hardware and software means;

Figure 4 shows a flowchart which describes how the multitask operating system functions;

Figure 5 shows a flowchart of verification of task activity;

Figure 6 shows the flowchart which describes task queuing; and

Figure 7 shows a second embodiment of the network according to the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The invention shown in Fig. 1 constitutes a jukebox unit (1) located in premises (Z1). This jukebox unit (1) is connected to a radio frequency modulator (9) which is connected to a coupler circuit C via a coaxial cable. Coupler circuit C via coaxial cable supplies distributors R which in turn are connected by coaxial cables to television sets (TV1, TV2, TV3, TV4). The coupler also

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receives on another of its inputs, via coaxial cable, a radio frequency source feed allowing distribution of ordinary television programs. Televisions are located in area (Z2) where each television is installed, for example, in a room. Television (TV1) is installed in the room (CH1), and this room (CH1) has a telephone set (T1) connected by a line to telephone exchange (10) of the PABX type. This exchange (10) is in turn connected to a billing computer. Finally, exchange (10) is connected to an appropriate interface of jukebox (1). Each room (CH2, CH3, CH4) which has television set (TV2, TV3, TV4) also has an associated telephone set (T2, T3, T4). Jukebox unit (1) is comprised of a central microprocessor unit CPU which is a high-performance PC-compatible system, the choice for the embodiment having fallen on an Intel 80486 DX/2 system which has storage means and the following characteristics:

- compatibility with the local Vesa bus,
- processor cache memory: 256 kO,
- high performance parallel and serial ports,
- SVGA-type microprocessor graphics adapter
- type SCSI/2 bus controller,
- 32 MO battery backed-up static RAM.

Any other central processor with equivalent or better performance can be used in the invention.

This central processor unit controls and manages audio control circuit (5), telecommunications control circuit (4), input control circuit (3), mass storage control circuit (2) and display means

control circuit (6). The display ~~means~~ consist essentially of 14 *a*
or 15 inch (35.56 cm) flat screen video monitor (62) without
interleaving of the SVGA type, with high resolution and low
radiation, which is used for image reproduction (for example, the
covers of the albums of the musical selections), graphics or video
clips.

Mass storage ~~means~~ *device* (21) using high-speed, high-capacity SCSI-
type hard disks ~~are~~ *is* connected to the storage ~~means~~ already present
in the microprocessor device. ~~These means are~~ *this device is* used to store
digitized and compressed audiovisual information.

High-speed telecommunications modem adapter (41) of at least
28.8 Kbps is integrated to allow connection to a network for
distribution of audiovisual information controlled by a central
server.

The central processing unit (CPU) also controls and manages
video controller circuit (7) connected by its output V2 to radio
frequency modulator (9) which is also connected to an audio output
of audio control circuit (5) which is independent of volume, tone
and balance controls.

To reproduce audio data of musical selections, the system has
loudspeakers (54) which receive the signal of an amplifier-tuner
(53) linked to electronic circuit (5) of the music synthesizer type
intended to support a large number of input sources while providing
one output with CD (compact disk)-type quality, such as for example
the microprocessor multimedia audio adapter of the "Sound Blaster"
card type SBP32AWE by Creative Labs Inc to which two memory buffers
(56, 57) are added for a purpose described below.

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Likewise the display means control circuit also has two buffer memories (66, 67) for a purpose described below.

Likewise additional video controller circuits (7) use these buffer (66, 67) circuits to transfer data between the hard disk and coaxial cable network.

A ventilated, thermally-controlled power supply of 240 watts delivers power to the system. This power supply is protected from surges and harmonics.

The audiovisual reproduction system manages via input controller circuit (3) an "Intelli Touch" 14-inch (35.56 cm) touch screen (33) from Elo Touch Systems Inc. which includes a glass coated board using "advanced surface wave technology" and an AT type bus controller. After having displayed on video monitor (62) or a television screen (61) various selection data used by the customers, this touch screen allows management command and control information used by the system manager or owner to be displayed as well. It is likewise used for maintenance purposes in combination with an external keyboard (34) which can be connected to a system which has a keyboard connector for this purpose, controlled by a key lock (32) via interface circuit (3).

Input circuit (3) likewise interfaces with a system remote control set (31) composed for example of:

- an infrared remote control from Mind Path Technologies Inc., an emitter which has 15 control keys for the microprocessor system and 8 control keys for the projection device.

- an infrared receiver with serial adapter from Mind Path Technologies Inc.

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A fee payment device (35) from National Rejectors Inc. is likewise connected to input interface circuit (3). It is also possible to use any other device which allows receipt of any type of payment by coins, bills, tokens, magnetic chip cards or a combination of means of payment.

To house the circuits, each device has a chassis or frame of steel with external customizable fittings.

Besides these components, a microphone (55) is connected to audio controller (5) of each device; this allows its conversion into a powerful public address system or possibly a karaoke machine. Likewise a wireless loudspeaker system can be used by the system.

Remote control set (31) allows the manager, for example from behind the bar, to access and control various commands such as:

- microphone start/stop command,
- loudspeaker muting command,
- audio volume control command;
- command to cancel the musical selection being played.

Two buffers (56, 57) are connected to audio controller circuit (5) to allow each to store information corresponding to a quarter of a second of sound in alternation. Likewise two buffers (66, 67) are linked to each video controller circuit (6), each of which is able to store a tenth of a second of video each in alternation. Finally, respective buffer (46, 36, 26) is linked to each of the circuits for the communications controller (4), input interface (3), and storage (2).

The system operating software was developed around a library of tools and services largely oriented to the audiovisual domain in a multimedia environment. This library advantageously includes a powerful multitask operating system which effectively authorizes simultaneous execution of multiple fragments of code. This operating software thus allows concurrent execution--in an orderly manner and avoiding any conflict--of operations carried out on the display means or audio reproduction means as well as management of the telecommunications lines via the distribution network. In addition, the software has high flexibility.

The digitized and compressed audiovisual data are stored in storage means (21).

Each selection is available in two digitized formats: with hi-fi quality or CD quality.

The multitask operating system is the essential component for allowing simultaneous execution of multiple code fragments and for managing priorities between the various tasks which arise.

This multitask operating system is organized as shown in Figure 3 around a kernel comprising a module (11) for resolving priorities between tasks, task scheduling module (12), module (13) for serialization of material used, and process communications module (14). Each of the modules communicates with applications programming interfaces (15) and database (16). There are as many programming interfaces as there are applications. Thus, module (15) includes first programming interface (151) for key switch (32), second programming interface (152) for remote control (31),

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third programming interface (153) for touch screen (33), fourth programming interface (154) for keyboard (34), fifth programming interface (155) for payment device (35), sixth programming interface (156) for audio control circuit (5), seventh programming interface (157) for video control circuit (6), eighth interface (159) for the video control circuit of the cable network and last interface (158a) for telecommunications control circuit (4) and (158b) for PABX communications control circuit (10).

Five tasks with a decreasing order of priority are managed by the kernel of the operating system, the first (76) for the video inputs/outputs has the highest priority, the second (75) of level two relates to audio, the third (74) of level three to telecommunications, the fourth (73) of level four to interfaces and the fifth (70) of level five to management. These orders of priority will be considered by priority resolution module (11) as and when a task appears and disappears. Thus, as soon as a video task appears, the other tasks underway are suspended, priority is given to this task and all the resources are assigned to the video task. At the output, video task (76) is designed to unload the video files from mass memory (21) alternatively to one of two buffers (66, 67) while the other buffer (67 or 66 respectively) is used by video controller circuit (6) to produce the display after decompression of data. At the input, video task (76) is designed to transfer data received in telecommunications buffer (46) to mass memory (21). It is the same for audio task (75) on the one hand at

the input between telecommunications buffer (46) and buffer (26) of
mass memory (21) and on the other hand at the output between buffer
(26) of mass memory (21) and one of two buffers (56, 57) of audio
controller circuit (5).

Task scheduling module (12) will now be described in
conjunction with Figure 4. In the order of priority this module
performs a first test (761) to determine if the video task is
active, i.e, if one of video buffers (66, 67) is empty. In the
case of a negative response the task scheduling module passes to
the following test which is second test (751) to determine if the
audio task is active, i.e, if one of buffers (56, 57) is empty. In
the case of a negative response third test (741) determines if the
communication task is active, i.e., if buffer (46) is empty. After
a positive response to one of the tests, task scheduling module
(12) at stage (131) fills memory access request queue (13) and at
stage (132) executes this request by reading or writing between
mass storage (21) and the buffer corresponding to the active task,
then loops back to the first test. When test (741) on
communications activity is affirmative, scheduler (12) performs
test (742) to determine if it is a matter of reading or writing
data in the memory. If yes, the read or write request is placed in
a queue at stage (131). In the opposite case, the scheduler
determines at stage (743) if it is transmission or reception and in
the case of transmission sends by stage (744) a block of data to
the central server. In the case of reception the scheduler
verifies at stage (746) that the kernel buffers are free for access
and in the affirmative sends a message to the central server to
accept reception of a data block at stage (747). After receiving
a block, an error check (748) of the cyclic redundancy check (CRC)

type is executed. The block is rejected at stage (740) in case of error, or accepted in the opposite case at stage (749) by sending a corresponding message to the central server indicating that the block bearing a specific number is rejected or accepted, then loops back to the start tests. When there is no higher level task active, at stage (731 or 701) the scheduler processes interface or management tasks.

Detection of an active task or ready task is done as shown in Figure 5 by a test respectively (721 to 761) on each of the respective hardware or software buffers (26) of the hard disk, (36) of the interface, (46) of telecommunications, (56 and 57) of audio, (66 and 67) of video which are linked to each of respective controller circuits (2, 3, 4, 5, 6) of each of the hardware devices linked to central unit (1). Test (721) makes it possible to see whether the data are present in the input and output buffer of the disk, test (731) makes it possible to see whether data are present in the hardware or software buffers of the customer interface device, test (741) makes it possible to see whether data are present in the software or hardware buffers of the telecommunications device, test (751) makes it possible to determine whether data are present in the hardware or software buffer for direction, and test (761) makes it possible to see whether data are present in the hardware or software buffers of the video device. If one or more of these buffers are filled with data, scheduler (12) positions the respective status buffer or buffers (821) for the hard disk, (831) for the interface, (841) for telecommunications, (851) for audio, (861) for video corresponding to the hardware in a logic state indicative of the activity. In the opposite case the scheduler status buffers are returned at

stage (800) to a value indicative of inactivity.

The operating status of the system is kept on the hard disk.

Each time a notable event occurs, the system immediately registers it on the disk.

Thus, in the case in which an electrical fault or hardware failure occurs, the system will accordingly restart exactly at the same location where it had been interrupted.

Events which trigger back-up of the operating status are:

- insertion of money (crediting);

- addition of a selection to the queue;

- end of a selection (change from the selection currently being played).

The file is then in a machine format which can only be read by the unit and does not occupy more than 64 octets.

The number and type of active tasks is indicated to scheduler (12) by execution of the selection management module SPMM whose flowchart is shown in Figure 6. The management exercised by this module begins with test (61) to determine if selections are in the queue.

Consequently, if test (61) on the queue determines that selections are waiting, when a customer chooses a title he wishes to hear, it is automatically written in a queue file of the system on the hard disk.

Thus, any selection made will never be lost in case of an electrical failure. The system plays (reproduces) the selection in its entirety before removing it from the queue file.

When the selection has been reproduced in its entirety, it is removed from the queue file and written in the system statistics

file with the date and time of purchase as well as the date and time at which it was played.

Immediately after transfer of the completed selection to the statistics file, the device checks if there are others in the queue file. If there is another, the device begins immediately to play the selection.

The total time elapsed between the end of one selection and the beginning of the next one is less than 0.5 seconds.

It is possible to extend this delay using a button located in the system control panel.

Processing continues with test (65) conducted to determine if the selection contains an audio scenario. If yes, at stage (651) this scenario is written in the task queue of scheduler (12). If no, or after this entry, processing is continued by test (66) to determine if the selection contains moving images. If yes, the video scenario is written at stage (661) in the task queue of scheduler (12). If no or if yes after this entry, processing is continued by test (64) to determine if the selection contains still graphics. If yes, at stage (641) this graphic presentation scenario is written in the task queue of scheduler (12). If no or if yes after this entry, processing is continued by test (63) to determine if the selection contains an advertising scenario. If yes, at stage (631) the scenario is written in the task queue of scheduler (12). Thus scheduler (12) notified of uncompleted tasks can manage the progression of tasks simultaneously.

Due on the one hand to the multitask management mode and on the other to the presence of hardware or software buffers assigned to each of the tasks to temporarily store data, it is possible to

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add management tasks of the video control modules for the coaxial network and of an interface with the telephone exchange on the premises without having to fundamentally modify functioning of a jukebox according to the invention. Moreover, operation of the telephone network in association with operation of the coaxial cable network on the premises makes it possible to broadcast music by the method according to the invention without having to make major modifications to the wiring on the premises and in the device allowing installation of the system.

In fact, in operation, a user, for example in room CH1, will take his set T1 and call a certain number corresponding to a imaginary room number allocated for use and selection of information to be broadcast on the coaxial network. When the PABX recognizes this number it sends a signal to interface (8) of jukebox (1) which triggers a task of selection of audio and video pieces to be broadcast. This selection task triggers transmission over the coaxial network of information which allows display corresponding to presentation windows which have selection boxes activated by a cursor moved by the actuation of certain buttons on the telephone. A software interface interprets the voice frequencies of the telephone buttons pressed to convert them into mouse events which can be interpreted by the operating system of the jukebox in such a way as to cause in association with these pushed buttons the movement of a marker on the windows shown on the television screens. This marker is moved on selection validation buttons in order to confirm the selection by pushing a button on the telephone keyboard specific to this action. The selection made

by the user in this way in his room using the telephone and television screen, will be taken into account in the jukebox request queue just as the other selections made on the touch screen of the jukebox and will be interpreted and sent over the cable network when the time comes in order to be broadcast over all the television receivers in the building. In addition, during telephone communication the PABX exchange sent a room identification number to the jukebox. This latter sends via the PABX to the billing system the room number and cost of the selection(s) made so that the user can be billed directly for the musical or video pieces he has chosen.

Finally, the device shown in Fig. 7 is another embodiment of this invention featuring the cable network with its distributors (R), its coupler (C) and its different television sets (TV1, TV2), connected by coupler (C) to a radio frequency modulator (9) which in turn is connected to the stereo, audio and video output (V2) of jukebox (1). Jukebox (1) has interface (81) (8) connected to box (82) plugged into the power grid. This box (82) is intended to extract from the current the control data which are superimposed on the carrier current. These control data are transmitted by control box (83) which in turn is connected to the grid by an electrical socket. The control box has either a mouse-type device or a trackball or joystick with a validation button to activate each time the presentation button of the screen on which the cursor or marker is moved via the movement component of the joystick, trackball or mouse type.

Any modification by one skilled in the art is likewise part of the invention.

CLAIMS

1. System for distributing and selecting audio and video information on a coaxial cable network comprising in association jukebox unit (1) connected by modulator (9) to this cable television distribution network, characterized in that it includes a channel allocated for the transmission of audio or video information;

means (T1, 83) for interacting with the television for the remote selection of at least one audio or video information item from the plurality of information items to be transmitted over the cable network by this channel;

means for identifying the selection means or the television set connected to the selection means;

user billing means linked to a television set for the selections made.

2. System for distributing and selecting audio and video information according to claim 1, wherein the selection means are composed of telephone network (T1) and associated exchange (10) of the PABX type which delivers to interface (8) of the jukebox voice frequency signals used by interface software incorporated into jukebox (1) to interpret the pushing of buttons on telephone set (T1) as mouse events affecting movement of a marker on screen windows for guiding the user, said signals also containing identification information.

3. System for distributing and selecting audio and video information according to claim 1 or 2, wherein voice assistance means guide the user in pushing the buttons of telephone set (T1).

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4. System for distributing and selecting audio and video information according to claim 1, wherein the selection means are comprised of control means (83) connected by the electrical network to appropriate interface (81) of the jukebox, said interface and selection means both operating on the principle of carriers to transmit a piece of identification information and control data corresponding to the pushing of control buttons.

5. System for distributing and selecting audio and video information according to one of claims 1 through 3, wherein the jukebox has mass memory means (21), a main processor operating a multitask system, video controller circuit (7) belonging to the cable network, said video controller circuit and audio controller card (5) being connected to radio frequency modulator (9) and output/input interface (8) for the remote selection means.

6. System for distributing and selecting audio and video information according to claim 5, wherein the jukebox has touch screen (33) and interface (153) specific to the touch screen, audio controller circuit (5) and video controller circuit (6) of a display device belonging to the jukebox.

7. System for distributing and selecting audio and video information according to claims 5 or 6, wherein jukebox (1) has money changing means (35).

8. System for distributing and selecting audio and video information according to one of claims 5 through 7, wherein the billing means use a database of the jukebox which links the

selected title to the selection cost and delivers to a billing system a user identifier and the amount to be billed to him.

9. System for distributing and selecting audio and video information according to one of the preceding claims, wherein the television screen enables display of a title selection menu allowing selections to be chosen either by direct access to the title or the performer, or by category and selection from a list of the category.

10. Method for using a system for distributing and selecting audio and video information comprised of a television cable distribution network connected via an RF modulator and an audio controller card and a video controller card to a jukebox unit, said jukebox unit being in turn connected to another network, either by telephone or electrically, by an interface, wherein said method includes the following stages:

- sending of an identifier of the premises linked to the television set either by telephone line or by remote control;

- a stage of selection of audio or video information to be executed on the network by use of a keyboard and an interface which interprets pushing of the keys as cursor movements;

- a stage wherein the order of selection and execution of the audio or video information is queued on the jukebox;

- a stage wherein this information is sent over the cable network;

- a stage wherein once the selection has been validated, information relating to user identification and selection cost is sent to a billing system.

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